

## Conference Paper

# Can Suramadu Bridge Reduce International Migration? (Case Study in Bangkalan Regency, East Java Province, Indonesia)

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## Abstract

Migration is one way for villagers in Bangkalan District to survive and improve their lives. Availability of employment and differences in the level of wages received in migrant areas are attractive factors, while the condition of villages in terms of physical capital, human capital, financial capital and natural capital which are less than ideal are the driving factors for migrating. This study examines the impact of the Suramadu bridge on the number of villagers migrating internationally using Village Potential data in 2007 and 2017 along with the factors that influence villagers to migrate internationally. Data were analyzed using tobit regression. The existence of the Suramadu bridge was not able to reduce the interest of the population to migrate internationally, instead it even increased the interest of the population to migrate internationally. Before the Suramadu bridge was operational, the existence of rice fields, building area, program credit, non-agricultural business, educational facilities and superior products reduced the interest of villagers to migrate internationally. After the Suramadu bridge operated, the existence of rice fields, building area and skills facilities reduced the interest of villagers to migrate internationally and the presence of poor people in the village increased the interest of residents to migrate.

**Keywords:** Migration, Infrastruktur, Rural, Regional

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## 1. Introduction

Migration is one of the strategies used by rural communities to sustain their lives and adapt due to rapid environmental changes. The advantage is that remittances by migrants to families are used for daily needs, increasing assets or starting productive businesses. Significant structural changes have occurred in Indonesia in the last few decades, resulting in economic transformation. The result is a change in supply and demand for labor that is apparent from population mobility, one of which is international migration.

Indonesia's economic growth after 2000 is consistently above 5%, however many workers are not absorbed and become unemployed. Likewise, poverty rates are still

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high even though there has been a downward trend lately. The majority of poverty that occurs in the rural population, making it an excuse to migrate out of their home regions, both to cities, cities or international migration. Around 9 million Indonesians who migrate abroad become TKI (Indonesian workers) with the majority in Malaysia, Saudi Arabia and Taiwan. Average unskilled laborers who work as domestic servants, drivers or plantation laborers (Syafitri, 2012).

Bangkalan is one area in Madura Island, East Java Province which is still classified as a disadvantaged area. Its economic growth is still below the national and provincial levels and the population living below the poverty line is still above 20%. The government has built the Suramadu bridge that connects Bangkalan on Madura Island and Surabaya on Java Island to increase accessibility and mobility, which in turn can improve the economy in Bangkalan Regency.

The condition of the village greatly influences the decision of the population to migrate internationally, which consists of the existence of physical capital, natural capital, financial capital, human capital availability of employment and wage rates (Syafitri 2012). This research is to find out and analyze the impact of the operation of the Suramadu bridge on the number of people who migrate internationally and what factors exist in the village that influence the population's decision to migrate internationally before and after the Suramadu bridge operates.

## 2. Literature Review

Migration is a phenomenon that has taken place following the journey of human civilization. Population movements from the country of origin outside the borders of his country are increasingly common in almost all parts of the world with increasing numbers and unequal reasons. Usually, the most underlying reasons for migration are economic reasons, the domestic political situation and natural disasters. Migration that involves labor is part of international migration. Initially, labor migration occurred to meet short-term labor shortages as happened in the United Amrerika in 1950 by bringing in Mexican workers. Slower population growth and reasonably good economic conditions in Northern and Western Europe in 1960 to 1970 were also the reasons for the entry of foreign workers (Weeks 1974).

Until 1980, the problem of labor migration was still seen from an economic and political perspective. This is why international migration is focused on wage inequalities that occur globally, economic relations with recipient countries, including the problem of capital movements, the role of multinational companies and structural changes in

the labor market related to changes and division of labor at the international level. The movement of the population from sending countries to receiving countries for migrant workers will make sending countries benefit remittances, while recipient countries will benefit from cheaper labor supply (Mulyadi 2003).

Indonesia is a country with a high unemployment rate. This condition is caused by the increasing number of labor force, on the contrary the limited work opportunities that encourage people to migrate to places even to other countries to get higher incomes. The sending of Indonesian migrant workers (TKI) abroad has been officially programmed by the government since 1975. This program is one of the policies developed by the Indonesian government to address this workforce.

Generally international migration is closely related to economic growth and demographic transition within a country. When a country experiences an economic setback which is characterized by low economic growth and high population growth, it is very unlikely that the country's economic activity can absorb excess labor. For this reason, sending workers is a solution to labor problems (Tjiptoherijanto 1997).

The number of Indonesian international migrant workers continues to increase. Around 70 percent of the workforce are women who are vulnerable to problems. International migration can have a positive impact on the destination country, country of origin and migrants and their families. For destination countries, the presence of migrants can fill the workforce that has been abandoned by the local population due to the country's increasing level of prosperity. Such employment as the plantation and building or construction sector in Malaysia has been largely replaced by workers from Indonesia or has increased the need for skilled workers in less numbers, such as the need for technician and service workers in middle east countries. For countries of origin is a source of foreign exchange earnings from remittances from migrant work abroad, while for migrants, this opportunity is an international experience and an opportunity to increase expertise and recognize work discipline in different environments. For migrant families, this is a source of income that can fulfill their living needs (Mulyadi 2003).

Road infrastructure increases access and mobility of the population thereby opening up business opportunities for the community (Mc Fadden & Gorman 2016). The availability of a large number of jobs will reduce the number of people migrating abroad (Brussels 2008). Education and skills will increase the ability, experience and education level of the community. Increased human capital encourages people to work whether they migrate to other areas to find decent work or open their own businesses. Overseas migration will be reduced because of the type of work that does not require a high level of education and skills (Sunam 2014). The existence of the market will encourage people

to open businesses and reduce the interest of people to migrate abroad (Syafitri 2012). The availability of access to credit in the community will encourage the community to open a business which then reduces the community to migrate abroad (Mazumder & Lu 2015). The existence of a source of clean water for people's lives increases the quality of life and the presence of superior products indicates the existence of comparative advantage that is owned by the village. This will increase the number of community businesses so as to reduce people's desire to migrate abroad (Syafitri 2012).

The use of land for buildings encourages communities to open businesses in villages, thereby reducing the desire to migrate abroad (Syafitri 2012). The greater the area of the paddy field will increase community efforts and reduce the desire to migrate (Syafitri 2012). The presence of farmers will increase the number of businesses to diversify income thereby reducing overseas migration (Collier & Dercon 2014). The number of poor people will reduce community businesses and increase overseas migration (Ingelaere et al. 2018).

### 3. Methodology

The model used in this study was developed by Syafitri (2012) who examined the factors driving international migration in East Java. The dependent variable is the number of villagers migrating abroad after the Suramadu bridge (Y). The independent variable is the number of villagers migrating abroad after the Suramadu bridge (X1), labor as seen from the number of non-agricultural businesses (X2), the number of farmers (X3) and the number of poor people (X4); human capital as seen from educational facilities (X5), skills facilities (X6); physical capital as seen from market access (X7), rice field area (X8), irrigated rice field area (X9) and building area (X10); natural capital as seen from access to clean water (X11) and superior products (X12); financial capital as seen from credit institutions (X13) and program credit (X14).

The model was analyzed using tobit regression in the condition before and after the operation of the Suramadu bridge. Tobit regression is used for the dependent variable whose value is limited (non-censored) while the independent variable has unlimited value (censored). The value of the independent variable in this study is limited to the lowest greater than 0 and the highest is 5%.

This research was conducted in 281 villages in Bangkalan Regency. The data source uses secondary data from the 2008 Village Potential which illustrates the conditions before the Suramadu bridge and the 2018 Village Potential which describes the condition after the Suramadu bridge. Village Potential is data released by the Central Statistics

Agency which contains the condition of villages in Indonesia which is done every three years.

## 4. Results and Discussion

Table 1. shows the results of the econometric statistics of the influence of the independent variables on migration in the village. In the model after the operation of the Suramadu Bridge, the Suramadu Bridge has a positive and significant effect on the number of people migrating internationally. The existence of the Suramadu bridge is not able to increase employment enough to improve welfare so that it can reduce the desire of the population to work as migrant workers. The number of residents who become migrant workers actually more and more significant after the operation of the Suramadu bridge. Skills facilities have a negative and significant effect on the number of people migrating internationally. Skills facilities can increase community expertise so as to create opportunities for people to open businesses as alternative jobs and reduce the desire for international migration.

Land use for non-agricultural activities has a negative and significant effect on the amount of international migration as well as land use for rice fields has a negative and significant effect on the amount of international migration. This shows that the use of land for community activities both in agriculture and non-agriculture will increase the number of businesses in the community, which in turn can reduce people's desire to migrate.

The existence of poor people has a positive and significant effect on the amount of international migration. An area with a high number of poor people triggers their citizens to migrate abroad. The limited employment in the village limits the income earned by its citizens so that migrating abroad becomes an alternative job. In addition, poor people usually have low levels of education and skills so that alternative job offers are limited to them.

### 4.1. Discussion

Investment in transportation infrastructure is often done to have an impact on the economic performance of a region. There is hope that good transportation acts as a catalyst for private sector investment, creates jobs, increases economic activity and grows the local economy. Improved transportation brings time and cost savings for users consisting of individuals and households in their work activities as well as companies

TABLE 1: The Impact of Suramadu Bridge on Migration.

No	Variabel	Sebelum Suramadu	Setelah Suramadu
1	Suramadu Bridge	-	0,229*** (0,030)
2	Non-Agriculture Business	-2,719* (1,579)	-1,590 (1,342)
3	Number of Farmers	-0,317*** (0,086)	-0,464 (0,384)
4	Poverty	-0,072 (0,312)	0,462 (0,288)
5	Educational Facilities	1,510*** (0,406)	0,185 (0,265)
6	Skills Facilities	-0,023*** (0,008)	-0,015* 0,005
7	Market Access	-0,166 (0,421)	0,261 (0,328)
8	Rice Field Area	-0,010 (0,006)	-0,002 (0,005)
9	Irrigated Rice Field Area	0,099 (0,163)	0,497** (0,220)
10	Building Area	-0,496 (0,515)	-0,573* (0,332)
11	Clean Water Access	-0,357 (0,297)	-0,274 (0,267)
12	Superior Product	-0,626** (0,294)	-0,108 (0,316)
13	Credit Institution	-0,011** (0,006)	-0,015*** (0,005)
14	Credit Program	-0,003 (0,014)	-0,001 (0,011)
15	C	3,574 (0,687)	2,167** (0,830)
	LR chi <sup>2</sup>	57,92	108,68
	Prob > chi <sup>2</sup>	0,0000	0,0000
	Pseudo R <sup>2</sup>	0,0517	0,0979

Source: Village Potential, 2018, 2008

Notes: \*\*\* p < 1%, \*\* p < 5%, \* p < 10%

that need to move goods, services and employees. Time and cost savings change the flow of traffic which leads to increased flow in some parts of the network and less traffic in other parts. Better transportation increases closeness, brings economic agents closer and triggers the relocation of economic activity because companies and households respond to new opportunities. Improved transportation enables savings in transportation and communication costs for companies, workers and consumers, which in turn makes transportation cheaper, more reliable and faster allowing companies to change the way they manage their production (Laird and Venables 2017).

Proximity and relocation form densities that make economic activity and productivity effective. This exceeds the direct productivity effect of faster travel because intense economic interactions occur in large, economically dense places. Improved transportation will make affected locations more attractive for investment. The benefits experienced by residents, workers and companies can cause investment to occur and change land use. Transportation can also increase labor supply due to ease of travel that occurs

and on the other hand will create demand in some places even if lost in other places (McFadden and Gorman 2016; Laird and Venables 2017). The condition is also expected to occur with the Suramadu bridge which increases access and mobility in Bangkalan Regency.

Migration is one of the livelihood strategies pursued by households in ecologically vulnerable communities by diversifying sources of income and to overcome the adverse effects of well-being from social, economic and institutional constraints in their place of origin. Migration can increase household income and facilitate ways to cope with income fluctuations through remittances (Nguyen et al. 2013). Migration abroad is a choice for the community of businesses that are not many and not feasible in the community (Brussels 2018). Increased access and mobility due to the Suramadu bridge can increase the number of community businesses but are unable to reduce the interest of the community to migrate abroad so that the presence of the Suramadu bridge actually increases the number of people who migrate internationally.

Increased skills encourage people to migrate because of the low availability of jobs in their home regions. However, high skills will reduce migration abroad because there are jobs abroad mostly for menial jobs with low skill levels (Sunam 2014). The performance of community businesses in the village is greatly influenced by the level of education and skills of the community, the higher the level of education and skills of the community, the more improving the community's business. A high level of education and skills will increase the ability of the community to do business. It will also increase the ability to look for opportunities and make decisions (McElwee 2006). Communities in making business decisions will usually seek advice from their family, friends and support groups according to their level of education and skills. Bad and inconsistent advice will limit the decision to do non-agricultural business (Lowe and Talbot 2000).

Building area has a negative effect on international migration according to the results of the study (Syafitri, 2012). An increase in building area shows an increase in land use for non-agricultural businesses so that directly an increase in building area shows an increase in business carried out by the community. This condition can reduce the desire of people to migrate internationally and reduce poverty.

Paddy area has a negative effect on international migration according to the results of the study (Syafitri 2012). Increasing the area of rice fields will increase the scale of agricultural business that will encourage the growth of community businesses that support agricultural activities. This condition will reduce the interest of the community to migrate, which in turn will reduce the level of poverty in the community. Fertile land

will increase non-farming because it has more free time (McNally 2001). Vulnerable agriculture such as rain-fed agriculture and those without productive factors can increase non-agricultural businesses (Knanal and Mishra 2015).

Irrigated fields increase productivity and reduce transaction costs in rural areas. Reducing the amount of input costs and increasing income (Renkow et al. 2004). An important institution in the village is the existence of irrigation channels in the village. Andrae (1986) explains that irrigation agriculture has a number of advantages over other agricultural patterns, namely: (1) increasing yields per hectare in general, enabling continuous land use without interrupting the recovery of soil fertility (fallow soil); (2) stabilizing crop yields, so that food supplies for humans and livestock are more secure and equitable; (3) increase the elasticity of the production sector and production intensity so that it becomes higher compared to rainfed agriculture or tree plantations and shrubs; (4) increase land use to produce food so that even small businesses are sufficient as a source of income for a farming family; and (6) allowing land to be expanded to include land that could not be previously cultivated due to lack of water.

Poverty has a positive effect on people who migrate internationally (Ingelaere et al. 2018). Poor people seek opportunities in the rural economy not only to increase income levels but also to stabilize household income over time. But lack of human, financial and physical assets can prevent households from opening up businesses. As a result they often remain limited to market segments with low productivity and low growth that are merely a means of survival (Haggblade et al. 2010). Poor households do not have sufficient capacity in resources such as human, social and financial resources. They prefer businesses that have a low risk of increasing their income such as becoming farm laborers so that it is not beneficial for the poor in reducing income inequality (Smith et al. 2001).

Poor households are less likely to be able to overcome obstacles in doing business and are limited to sectors with low returns that do not have a significant role in reducing poverty. Poor households are trapped in low-income business sectors that do not require high investment capacity and special skills (Canagarajah et al. 2001).

Not every poor person can do non-agricultural business. Much lack of information, mobility, technical skills, financial capital and personality traits is needed to manage the business effectively. For them, the fastest route to prosperity lies in the labor market. In the regional economy, increases in wage rates and demand for labor trigger significant opportunities even for unskilled labor. Non-agricultural wage employment is available in rural construction, processing plants and the assembly market network. In some cases,



the government and the private sector offer significant employment opportunities for unskilled workers (Adams 2002).

On the other hand, poverty in the countryside increases migration out of agriculture because they have to try to live. The choice of agricultural work in the village is not sufficient to meet the needs of the poor, thereby increasing migration outside the region either in the form of urbanization or becoming overseas labor (Ingelaere et al. 2018). A similar result was stated by Syafitri (2012) who stated that in the case of East Java poverty increased the number of people migrating abroad.

## 5. Conclusion

Overseas migration is a solution for villagers to get work, but the amount must be controlled especially in the provision of jobs in the country. The existence of the Suramadu bridge actually reduces the influence of factors of production in the village so that the number of people migrating is greater. Before the operation of the Suramadu bridge, the number of farmers, the number of non-agricultural businesses, superior products, educational facilities, skills facilities and the existence of credit institutions affected the population's desire to migrate. After the operation of the Suramadu bridge, the factors of production that fell on the village were rice fields, building area, credit facilities and the existence of credit institutions.

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